

1916.  
NEW ZEALAND

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## MILITARY SUPPLIES AND MUNITIONS.

MEMORANDUM REGARDING ORGANIZATION OF INDUSTRIAL POWER FOR PRODUCTION OF MILITARY EQUIPMENT, ALSO REFERRING TO OPERATIONS CONNECTED WITH PURCHASE OF MILITARY SUPPLIES AND MATTERS APPERTAINING TO THE PRODUCTION OF MUNITIONS IN NEW ZEALAND.

*Laid on the Table of the House of Representatives by Leave.*

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Office of Minister in Charge of Munitions and Supplies,  
Wellington, 16th June, 1916.

RECOGNIZING that a report of the activities of a newly created Department will be of interest, especially as it concerns the equipping of our troops, I desire to outline in this memorandum what has been done in connection with the administration of the portfolio which I hold of Minister in Charge of Munitions and Supplies. For the purpose of convenience I propose to treat the subject of military supplies and munitions under separate heads, dealing firstly with the former, and secondly with the latter.

### SUPPLIES

When the imperative need to extend and accelerate our quota of Reinforcements was finally established in August, 1915, it was immediately fully recognized that the magnitude of the task necessitated some relief being afforded the Hon. Minister of Defence in the discharge of the duties hitherto devolving upon his office. To meet this need it was decided by the Government that the responsibility of providing equipment for the Forces should be separated from those duties and responsibilities connected with problems of recruiting and Defence administration generally, the primary object of such a separation being to relieve the Defence administration of all business matters connected with the purchase of supplies. It was therefore agreed between my colleague the Hon. Minister of Defence and myself that he should on the one hand undertake the duty of specifying the kind of goods required, and also of stating time and place such goods were needed, while I on the other hand was to assume responsibility for all purchases made; a further understanding being that on delivery of the goods to the Defence Department the Minister of that Department would take control and custody of them for the purpose of distribution.

It was also agreed that the Defence Department should submit to me quantities of supplies and stores required, and estimate what was wanted in the most important lines, to meet its requirements (*a*) up to the end of 1915 and (*b*) for the calendar year 1916.

When this information was duly supplied it was found that the goods required under heading (*a*) comprised only articles which could be produced in New Zealand, while those required under heading (*b*) involved also accoutrements and equipment obtainable exclusively from the War Office. In regard to the accoutrements an understanding was arrived at whereby requirements would be arranged for by the Defence Department as heretofore, but in regard to all other articles the duty of providing for same would devolve on me.

This being the position, the activities of my Department commenced. The work first taken up was that most pressing—namely, the acquisition of supplies required immediately to equip the men then coming into camp on the 13th October, 1915. When these needs were provided for supplies wanted for the following November and December were purchased.

In August last the Government of New Zealand had not committed itself to send forward 2,500 men per month during 1916, nor had a promise been made to accelerate Reinforcements during the remainder of the year 1915; but, even so, the Defence Department had already experienced difficulty in adequately providing for the men coming into camp and being despatched abroad under the then existing commitments: difficulty in securing supplies being chiefly experienced in regard to boots, uniform clothing, and woollen articles which were short-tendered for in August last year. The shortages early in August were—5,000 cholera-belts, 2,040 jerseys,

5,500 underpants, 5,180 undershirts, 4,415 working-shirts, 8,200 pairs socks, 3,500 pairs canvas shoes, 600 denim suits.

Up to this point of time—namely, August, 1915—the requirements for the Forces were met by the Department calling for tenders for two-monthly supplies at a time. It is, however, to be remembered that shortly after August, 1915, it was determined to accelerate the despatch of Reinforcements from our shores, and to provide equipment for this acceleration larger quantities of goods were of course imperatively and urgently needed. To ascertain whether competition would produce the quantity of goods necessary to meet the acceleration I caused tenders to be invited for the quantities of the supplies required, the conditions of supply being that tenderers were to offer goods according to departmental samples, or as near thereto as possible. When these tenders were duly preferred on the 4th October, 1915, it was found that all the goods required were not on offer. The shortages revealed were as follows: Blankets, 16,734; working-shirts, 11,264; jerseys, 6,775; socks (pairs), 20,508; underpants, 14,400; undershirts, 16,066; cholera-belts, 7,920.

From the above-indicated shortages it is obvious that our troops could not go forward as promised unless the requisite articles of equipment were immediately secured. Therefore early in October last I accepted the gratuitous and patriotic services of two gentlemen of high standing in the New Zealand soft-goods trade, and under my direction these gentlemen firstly secured from wholesale houses and from the woollen-mills such goods as were immediately wanted in camp on the 13th October, and secondly arrangements were made from the same sources for the articles needed for the following months of November and December.

In this connection I have to state that the offers made by tender above referred to were largely received from various middlemen, and consequently such offers were not entertained, as the bulk of the orders were placed at lower prices for better articles with the mills direct. The woollen-mills willing to thus assist found themselves very short of the raw wool necessary to execute military orders; indeed, in one instance a parcel of wool was, with my cognizance, purchased in October for the purpose of producing those articles so urgently needed.

#### PRODUCTION OF MILITARY EQUIPMENT—NEW ZEALAND FACTORY-POWER.

Thus having disposed of the business connected with supplies required for the year 1915, the serious question of providing for 2,500 men per month during the year 1916 was given consideration. It is important here to note that a general impression then existed that difficulty would be experienced in finding factory-power in the Dominion to produce articles for military purposes in addition to the goods required for New Zealand domestic consumption. Accordingly I desired to ascertain whether the combined factory-power of New Zealand could produce full quantities of military equipment required without disturbing the output for ordinary trade, and I therefore caused to be collected from 215 factories in the Dominion statistics which were grouped under two heads, namely: (a) Total output per week if exclusively employed on production of military equipment; and (b) probable output per week of military equipment if produced in addition to executing ordinary trade orders.

I desire to express my thanks for the work done by the officers of the Labour Department who, under the direction of the Minister of Labour (Right Hon. W. F. Massey), collected the information above referred to.

Compilation proved that our domestic power of production under (b) above was ample in all respects to turn out military equipment except in regard to the production of woollen cloths and garments. In this connection it was found that the combined capacity of the New Zealand woollen-mills was barely adequate to produce the quantities needed within the periods required, and that it was quite inadequate to meet the existing demands of ordinary customers and to at the same time execute orders for the full quantities of military equipment required.

It was therefore decided to obtain the views of the New Zealand woollen-millers in the matter, and a conference was accordingly convened at Wellington on the 28th October, 1915. As a result of the deliberations of this conference I am pleased to be able to record the fact that the necessary orders for supplies required were placed, and patriotically accepted by the millers. In view of the ready and willing manner in which the millers met the Department in this connection there was no necessity to exercise the power to compel production, which had been provided for by the War Regulations Amendment Act, passed towards the close of last session of Parliament. As the outcome of this conference orders were placed for goods, distributed over all the woollen-mills, to the value of £554,295 for delivery throughout the year 1916. The sum total of business transacted was made up as follows:—

	Total Cost.		
	£	s.	d.
100,708 tunics	125,271	14	4
102,508 trousers	70,356	9	6
24,340 pantaloons	20,410	0	0
57,688 greatcoats	122,526	5	4
70,000 putties (pairs)	18,812	10	0
156,720 grey blankets	67,912	0	0
110,490 underpants	27,573	12	6
110,490 shirts (under)	27,206	2	6
118,332 shirts (working)	41,416	4	0
156,060 socks (pairs)	10,604	5	0
57,000 jerseys	15,652	10	0
62,910 cholera-belts	6,553	2	6
	<b>£554,294</b>	<b>15</b>	<b>8</b>

The prices on which the above total costs have been based were not determined till the following months of December and January, during which time each line was costed and fixed prices, based on value to be supplied, were determined. Tenders from all parts of the Dominion for the making of garments were also invited, and contracts for the same were let, having a currency throughout the calendar year 1916.

One of the results of the conference of woollen-mill representatives was to demonstrate the ability of our factories to supply the whole of New Zealand's military requirements in goods of the kind which can be produced in the Dominion. This was done by the voluntary restriction of orders from the general public.

In regard to the £554,295 shown above as being required for uniform clothing and woollen goods, it is estimated that one million five hundred and forty-eight thousand pounds sterling (£1,548,000) will be expended to secure military supplies for the calendar year 1916. This sum is made up as follows:—

	£
(1.) Uniform clothing and woollen goods	554,295
(2.) Other stores such as boots, hardware, leather goods, furniture, &c.	545,705
(3.) Supplies such as food and forage	424,500
(4.) Drugs for medical, dental, and veterinary services	23,500
Total	<u>£1,548,000</u>

#### STORAGE ACCOMMODATION.

The certainty of production having thus been achieved, consideration in turn was given to the question of creating and providing for reserve of stock. The first thing done in this connection was to ascertain whether there was room to store such goods when acquired, and I found on the 29th September last, after personal inspection of the Headquarters Store site in Buckle Street, that such accommodation did not exist. Accordingly a new building was arranged for, giving an extra floor-space of approximately 5,000 square feet. As this building was urgently needed, I requested my colleague the Hon. Minister of Public Works to kindly accelerate construction, and I take pleasure in stating that this commodious addition was constructed within three weeks, and completely equipped with hoist and fittings within one month, after my request.

Owing to the greater volume of business now occasioned by providing stores for our increased monthly commitments it was found necessary in March last to secure additional accommodation, consequently at the present time the Public Works Department has in hand the erection of another building on the store-site, Buckle Street.

#### WORKERS SKILLED IN PRODUCTION OF MILITARY SUPPLIES.

To secure the retention in their employments of those men necessary to the production of military equipment, under General Order No. 28/1916, any contractor supplying military stores or supplies can make application for the exemption from active service of any member of his staff *who has enlisted*. With respect to exemptions under this heading, the Recruiting Board decided that badges should be issued only on my recommendation as Minister in Charge of Munitions and Supplies, and in this connection I have to report that no such recommendation has been made without full and careful inquiry into the position relative to each case. To date fifty-three cases have been reported on and considered, out of which number nineteen have been recommended for retention. I have also to report that in no case has an exemption been given for a period beyond the 31st December, 1916.

#### VARIETY OF SUPPLIES.

The variety of goods required for military purposes is only conceivable when one surveys the wide field of operation to which they are applied. It is to be remembered that the men are clothed with sets of every article of personal attire, ranging from boots to hats. They are equipped with gear for the carriage of their belongings, also provided with accoutrements and other accessories. In addition to this, they are fed according to ration as prescribed, and provision is made for bed-clothing and housing. Further, vehicles of transport are arranged for, and the stores and supplies incidental to the means of transport are provided.

The foregoing outline, of course, involves articles used in connection with preparation and consumption of food, cleansing and sanitation of shelters. Outside of provision in the ordinary course, as indicated, hospital stores and supplies are needed, and drugs are wanted for Medical, Dental, and Veterinary services; also forage and gear for horses have to be purchased.

#### PERSONAL EQUIPMENT.

As the men called up arrive in camp a "first issue" is made to them. This consists of—One greatcoat, one felt hat, one kit-bag, three blankets, one pair boots, two pairs drawers, two working-shirts, two undershirts, one denim suit, three pairs socks, one jersey, one set knife, fork, and spoon, one plate and mug, two towels, one waterproof sheet, one pair braces. Fourteen days after arrival in camp the men called up receive a "second issue," as follows: One jacket, one pair trousers, one pair putties, one set brass tittles, one set chevrons (if necessary). A "third issue" is made to the men sent abroad. This is made three weeks before sailing-date, and it consists of—One jacket, one pair trousers, one forage-cap, one pair boots, one pair canvas shoes, one cholera-belt, one holdall, one sea kit-bag, one Balaclava cap, one mess-tin and cover, one housewife.

The three issues combined are shown in the following table giving details of the complete equipment for infantry and mounted men :—

MOUNTED MEN.				INFANTRY.			
Article.	No. of each issued per Man.	Cost of Issue per Man.		Article.	No. of each issued per Man.	Cost of Issue per Man.	
		1915.	1916.			1915.	1916.
<i>Issue of Personal Equipment.</i>				<i>Issue of Personal Equipment.</i>			
Tunics .. .. .	2	£ 1 18 6	£ 2 9 9	Tunics .. .. .	2	£ 1 18 6	£ 2 9 9
Pantaloon .. .. .	2	1 7 0	1 13 6½	Trousers .. .. .	2	1 3 4	1 7 5½
Putties .. .. .	1	0 4 0	0 5 4½	Putties .. .. .	1	0 4 0	0 5 4½
Greatcoat .. .. .	1	1 16 0	2 2 5½	Greatcoat .. .. .	1	1 16 0	2 2 5½
Hat and puggaroo ..	1	0 6 2	0 5 6½	Hat and puggaroo ..	1	0 6 2	0 5 6½
Cap .. .. .	1	0 4 2	0 4 3	Cap .. .. .	1	0 4 2	0 4 3
Kit-bag .. .. .	1	0 3 3	0 3 3½	Kit-bag .. .. .	1	0 3 3	0 3 3½
Blankets .. .. .	3	1 4 0	1 6 0	Blankets .. .. .	3	1 4 0	1 6 0
Braces .. .. .	1	0 1 3	0 1 0½	Braces .. .. .	1	0 1 3	0 1 0½
Boots .. .. .	2	1 16 10	1 18 0	Boots .. .. .	2	1 16 10	1 18 0
Drawers .. .. .	2	0 8 6	0 10 0	Drawers .. .. .	2	0 8 6	0 10 0
Shirts, working ..	2	0 12 6	0 14 0	Shirts, working ..	2	0 12 6	0 14 0
Shirts, under ..	2	0 8 6	0 9 10	Shirts, under ..	2	0 8 6	0 9 10
Shoes .. .. .	1	0 6 9	0 6 6	Shoes .. .. .	1	0 6 9	0 6 6
Suit, denim .. .. .	1	0 8 6	0 8 8	Suit, denim .. .. .	1	0 8 6	0 8 8
Socks .. .. .	3	0 3 0	0 4 0½	Socks .. .. .	3	0 3 0	0 4 0½
Cholera-belt .. .. .	1	0 1 2	0 2 1	Cholera-belt .. .. .	1	0 1 2	0 2 1
Holdall .. .. .	1	0 0 4½	0 0 5½	Holdall .. .. .	1	0 0 4½	0 0 5½
Sea-kit .. .. .	1	0 0 4	0 0 2½	Sea-kit .. .. .	1	0 0 4	0 0 2½
Jersey .. .. .	1	0 5 6	0 5 6	Jersey .. .. .	1	0 5 6	0 5 6
Housewife .. .. .	1	0 10 0	0 0 6	Housewife .. .. .	1	0 10 0	0 0 6
Knife, fork, spoon ..	1	0 1 6	0 1 6	Knife, fork, spoon ..	1	0 1 6	0 1 6
Plate and mug .. ..	1	0 0 4½	0 0 4½	Plate and mug .. ..	1	0 0 4½	0 0 4½
Towels .. .. .	2	0 1 6	0 1 5	Towels .. .. .	2	0 1 6	0 1 5
Sheet, waterproof ..	1	0 8 9	0 8 5	Sheet, waterproof ..	1	0 8 9	0 8 5
		12 9 3	14 2 9½			12 5 7	13 16 8½
<i>Issue of Accoutrements.</i>				<i>Issue of Accoutrements.</i>			
Rifle .. .. .	..	3 12 0	5 10 0	Rifle .. .. .	..	3 4 3	5 10 0
Bayonet .. .. .	..	0 8 3	0 12 0	Bayonet .. .. .	..	0 8 3	0 12 0
Scabbard .. .. .	..	0 3 3	0 6 10	Scabbard .. .. .	..	0 2 5	0 6 10
Pull-through .. .. .	..	0 0 4	0 0 5	Pull-through .. .. .	..	0 0 4	0 0 5
Oil-bottle .. .. .	..	0 0 3½	0 0 10	Oil-bottle .. .. .	..	0 0 3½	0 0 10
Water-bottle .. .. .	..	0 2 7	0 2 10	Water-bottle .. .. .	..	0 2 7	0 2 10
Water-bottle carrier ..	..	0 2 4	0 3 4	Water-bottle carrier ..	..	0 1 2	0 1 4
Haversack .. .. .	..	0 1 4	0 1 6	Implements, entrenching, heads	..	0 0 4½	0 0 6
Bandolier (150 rounds) ..	..	1 4 0	1 4 0	Implements, entrenching, helms	..	0 3 10	0 3 4½
Mess-tins, complete ..	..	0 3 3½	0 3 2	Mess-tins, complete ..	..	0 0 1	0 0 1
Identity-disc .. .. .	..	0 0 1	0 0 1	Identity-disc .. .. .	..	..	..
		5 17 9½	8 5 0			5 10 0	8 9 11½
Totals .. .. .	..	18 7 0½	22 7 9½	Totals .. .. .	..	17 15 7	22 6 7½

From the above it will be seen that at the present time it costs the Dominion £22 6s. 8d. to equip an Infantry man and £22 7s. 9d. to equip a Mounted man for active service with the Expeditionary Forces. In regard to the comparison of cost, taking the year 1915 as against 1916, the position is as follows :—

*Percentage of Increase, 1916 over 1915 Prices.*

	Mounted.	Infantry.
Issue of personal equipment as shown above .. .. .	13·45	12·67
Accoutrements issued as shown above .. .. .	40·10	54·50
Percentage of increase on total cost per man .. .. .	22·00	25·61

As regards the items issued as personal equipment above mentioned, in view of the increased weights of cloths and the superior quality of the underclothing, boots, and other articles arranged for, I have no hesitation in regarding the increase indicated as a most reasonable one under the conditions now obtaining.

In placing orders for such large quantities of goods as are now required to meet present military commitments it will be readily understood that in providing for the quantities wanted it has been found necessary to slightly deviate in respect to quality, weight, and colour from standards which were laid down when provision had only to be made for much smaller numbers of troops. In this matter, too, it has been found necessary to spread the orders for particular lines throughout the Dominion, and in such cases it has been considered reasonable to accept quotations on f.o.b. prices, so that merchants or manufacturers were in all parts on equal terms in this respect. During 1915 the policy of accepting quotations "delivered to Defence Stores, Wellington," was rarely departed from.

Dealing now more particularly with the several classes of articles purchased for the year 1916, I have to report as follows:—

#### KHAKI CLOTHS.

Subsequent to the conference with the woollen-millers held on the 28th October, 1915, a further conference was held, at which it was agreed to standardize the various weights of cloths, and the following weights were agreed upon: Tunic cloths, 22 oz. per yard; whipcord, 30 oz. per yard, overcoating, 28 oz. per yard; shirting, 4½ oz. per yard.

The total length of cloth required for the year 1916 and ordered for uniforms, overcoats, working-shirts, and pantaloons aggregated about 530 miles, or, in other words, would cover the distance from Wellington to Auckland and 100 miles to spare.

The net prices fixed for these respective cloths were as follows: Tunic cloth (woollen), 8s. 6d. per yard; tunic cloth (worsted), 9s. per yard; whipcord, 9s. 6d. per yard; overcoating, 9s. per yard; shirting, 1s. 10d. per yard. These prices were determined after costings had been submitted by the mills and adjudicated upon by experts. Taking into account the weights above mentioned and the rate of wages ruling in New Zealand, I find these prices favourably compare with Australian and English prices.

#### UNIFORM GARMENTS.

Having secured certainty of supply for the quantity of khaki cloth required, tenders were invited from clothing-manufacturers for the making-up of garments only. These tenders having been received, the clothing-manufacturers were then asked to quote for the making-up of garments complete with cloths at the fixed prices, with certain additions thereto to meet usual trade terms. These prices, per yard, were (delivered): Tunic cloth, 8s. 10½d.; worsted, 9s. 4½d.; whipcord, 9s. 10½d.; overcoating, 9s. 4½d.; shirting, 1s. 11½d.—all being less 3½ per cent. cash discount.

Having received full information from these sources, orders were placed throughout the Dominion for the making-up of the garments required.

The output of cloth for civilian clothing and garments being practically stopped, it was arranged with the three large woollen-mills of New Zealand that they should accept orders for the making-up of garments from the cloth produced by their mills. This was necessary in order that work might be found for the large staffs employed in the factories attached to these mills.

It is estimated that between 80 and 90 per cent. of the combined output of the New Zealand woollen-mills will be absorbed by the production of goods for military purposes during the months of January–August this year. From September to the end of this year the reduction in the output of goods for military purposes will enable the woollen-mills to devote their attention to the execution of their ordinary trade orders.

#### DENIM SUITS.

As approximately the whole of the cloth required for denim suits made up during 1915 was obtained by merchants from America, and further supplies from that source appeared to be uncertain, I placed orders direct with English manufacturers for shipment through the High Commissioner for New Zealand in London, and so secured a supply of *British-made material* based on a sample which had the approval of our military authorities. A quantity of this material which has since come to hand has proved quite satisfactory, and contracts for the making-up of the cloth into denims have been let with various manufacturers. This has proved to be a more economical method of procuring these supplies than by securing tenders for the garments complete.

#### WOOLLEN GARMENTS.

The mills accepting orders for these articles were asked to furnish samples, which were on receipt submitted to military authorities for approval. The proper weight and texture in each case having been determined, orders were confirmed accordingly, at prices based on value to be supplied. I have no hesitation in saying that the quality of uniform materials and the quality of the underclothing is of a very superior kind, and, notwithstanding the considerable advances in the value of wool, the prices paid for socks—namely, 1s. 3d., 1s. 4d., and 1s. 5d. per pair—compare well with the prices paid by the Department in the past for 1915 supplies—namely, 1s. per pair, although towards the close of 1915 1s. 2½d. per pair was paid. In addition, the socks now obtained are two-ply socks instead of one-ply. Similarly, the prices paid for undershirts and underpants—namely, 4s. 6d. and 5s. 3d.—contrast well with prices previously paid. Here again it is to be noted that the articles at 5s. 3d. are two-ply yarn instead of single-ply, the wearing-qualities of which are much superior.

Orders for supplies of jerseys have been placed throughout the year at 5s. 6d. each, thus securing jerseys for the calendar year 1916 equivalent to those offered in the October tenders at 6s. 3d. and 6s. 6d. each.

#### BLANKETS.

The prices now being paid for 9/4 blankets (5 lb. per pair) is 7s. 10½d. each, as compared with 6s. 6d. to 7s. 4½d. for August, and 6s. 9d. to 7s. for October and November last.

Blankets (10/4—7 lb. per pair): The price now being paid is 10s. 3d. each, as compared with 8s. 6d. to 9s. 3d. for August, and 9s. to 9s. 6d. for October last.

If the blankets required for the year 1916 were all in one piece they would cover an area of 134½ acres.

#### FOOTWEAR.

In regard to boots and canvas shoes: Towards the close of the year 1915 there were two manufacturers supplying under contracts, and about seven others had orders for execution. The

latter appear to have been placed last winter, when it was decided to give the troops two pairs of boots instead of one pair each. Owing to supplies from such manufacturers not being delivered fast enough, various lines of heavy boots were purchased from stocks held by warehousemen and retailers. The design and quality of the boots purchased as a result of this method were varied, and led the Boot-manufacturers' Association of New Zealand to state that they regarded the matter as unsatisfactory. The representatives of this association who waited upon me pointed out—(1) the desirability (a) of securing uniformity of design and sample; (b) of providing three fittings to every size—namely, narrow, medium, and wide: (2) the advantage and economy to be effected by (a) placing running instead of spasmodic orders, and (b) combined orders for boots and shoes (for the shoe absorbs the leather regarded as too poor in quality for the boot). At the request of these gentlemen I consented to Mr. C. J. Ward conferring with the Staff of the Quartermaster-General (3) with a view to preparing samples of one design and quality. When Mr. Ward had carried this out the samples were duly approved by the Department and the manufacturers, and tenders were then invited for 1916 supplies.

To secure uniformity of design I secured military lasts, which were ordered from Raymond and Co., Melbourne. The majority of these have been sold, without loss, to successful tenderers, and the balance are now held in store as a standby in case it is found necessary to extend orders for supplies. A comparison of prices (both being for delivery to Defence Stores, Wellington) stands as follows:—

	1915.		1916.	
	s.	d.	s.	d.
Boots	18	5	19	0
Shoes	6	9	6	6
Totals	25	2	25	6

It is to be observed that the 1916 boot has the advantage of two complete soles, while the 1915 pattern has but one; the advantage being that the boot is so constructed as to permit of the removal of the outer sole when it is worn out, and to leave the second sole for future use.

Taking into account the advance in price of leather and materials, together with the strict inspection to which manufactures are now subjected (both in factory and finally at store, Wellington), I regard the above prices as satisfactory. *No complaints in reference to these boots have reached me;* on the contrary, all reports on them speak highly of their design and quality.

In regard to the preservation of boots and their proper storage when received into store, this matter has had full attention, and expert advice tendered has been given effect to at small expense.

#### HOLDALLS AND HOUSEWIVES.

I am pleased to report in this connection that early this year I was able to come to a business-like arrangement with the executive of the committee of the Countess of Liverpool's Fund, whereby the committee are, at fixed prices, supplying our requirements in these two articles—namely, 3,000 holdalls, and 3,000 housewives per month. The organization of the society is fully extended over the North Island, and partly over the South Island, to meet this demand. These goods are far superior in quality to those hitherto obtainable, and no failure in deliveries has been experienced. I desire to record my sincere appreciation of and to acknowledge the patriotic enterprise characterizing the practical help which this society has afforded in regard to the supply of these two necessary articles.

#### FOODSTUFFS.

Referring now to the matter of acquiring supplies for camps and troopships, I have to report that this business has been entirely conducted by securing the competition of tenderers. In certain respects it was found advisable to extend the periods of contract, and in other cases to allow ample time within which merchants could tender. In the case of tinned foodstuffs in particular the contract for jam for camps was let by tender up to the end of this year. This action was occasioned by reason of the fact that considerable difficulty is being experienced in securing regular supplies of tinplates. Having placed the order with the successful tenderer—Messrs. Kirkpatrick and Co. (Limited), of Nelson—I have since taken steps through the High Commissioner for New Zealand in London to endeavour to secure shipment of supplies of tinplates required by the company to execute the contract.

Certain economies have been effected by arrangements made with the Imperial Government Supplies Branch in regard to fresh meat, cheese, and butter. It may be of interest here to state that for the closing months of the year 1915 it cost approximately 1s. 8d. per day per man to provide food for the men under training. The position in this respect for the present year 1916 is as follows:—

	Featherston Camp.		Trentham Camp.	
	s.	d.	s.	d.
January	1	6·006	1	5·5
February	1	6·023	1	5·5
March	1	7·739	1	7·5
April	1	7·732	1	7·5
May	1	7·871	1	8

The above covers the cost of three meals per man per day; also early morning tea or coffee, supper for guards and picquets, morning tea and afternoon tea. The latter is supplied on account of continuous parades and instead of allowing the men to drink water. An idea as to quantities of articles required is readily obtained from the following figures roughly covering

a twelvemonth's supply: Bread, 3,750,000 lb.; butter, 1,300,000 lb.; cheese, 650,000 lb.; coffee, 30,000 lb.; flour, 1,800,000 lb.; candles, 20,000; jam, 1,261,000 tins; fresh meat, 4,500,000 lb.; fresh milk, 180,000 gallons; oatmeal, 420,000 lb.; tea, 214,850 lb.

#### DRUGS.

Supplies of drugs for medical purposes were tendered for, for the period January to June, 1916, under the following conditions: The Department purchased quantities likely to be required during this period, and vendors were bound to hold same, covered by insurance, to the order of properly authorized officers, payment being made as goods were delivered. This method has proved satisfactory to the suppliers and profitable to the Department. In regard to drugs and other supplies for dental purposes, there are only two or three of these supply-houses available, each of which specializes in different lines. Therefore calling for tenders would have led to no advantageous results to the Department, and arrangements were consequently entered into with the houses concerned whereby supplies required can be secured by properly authorized officers on terms considerably better than those given by these wholesale houses to their ordinary customers. In regard to drugs for veterinary services, these supplies are purchased, under my control, by expert officers from wholesale houses. The amount involved is small, being estimated at about £30 per month for the present year.

#### MISCELLANEOUS HARDWARE.

No contract for these supplies has yet been arranged for, owing to the fact that the supplies required are so varied in character and frequently small in number, and it has hitherto been found impossible to estimate requirements. In addition to this there has been, up to recently, no accommodation at the Defence Stores in which such goods could be stored. Therefore the goods requisitioned for from camps, hospitals, Samoa, and troopships have been secured by experts, subject to my control, from wholesale merchants and manufacturers in the trade. However, this means of acquisition having been regarded as an emergency method, I have caused past purchases to be reviewed and future requirements to be anticipated. The result is that shortly hardware-merchants throughout the Dominion will be given an opportunity to tender for the goods likely to be required for military purposes for the balance of the year 1916.

#### BEDDING.

Anticipating a rising market in hessian, contracts were let early this year for the total quantities required for twelve months. This step has proved advantageous to the Department and satisfactory to suppliers.

#### FORAGE.

In the purchase of supplies of forage it was found towards the close of 1915, when stocks held were in small compass, that publication of Defence requirements adversely affected the market to the Department. This being the recognized position, satisfactory arrangements were made for the purchase of large supplies of forage without to any extent disturbing the market. When the quantities wanted are small and ample supplies on offer full advantage is taken of the benefit of competition.

#### RAW MATERIALS.

Difficulty was experienced under two heads in regard to raw materials necessary for the production in New Zealand of goods required here for our military purposes. The first matter arose in regard to raw wool. Experts estimated that the raw wool needed to produce the woollen goods requisite for 1916 amounted to about 12,000 bales, or approximately two-thirds of the wool consumed by our mills to execute the orders of their ordinary customers in a year of peace. It was patent, therefore, that it would be advantageous to the Department if the wool were purchased by one buyer. This was not an easy matter to provide for, as different millers desired to secure particular lots; but finally it was agreed to accept the patriotic offer of Mr. Walter Hill, of Christchurch, to purchase, without commission, the wool needed to execute the orders for military purposes, and 10,660 bales, containing 3,797,741 lb. of wool, were secured in this manner at an average cost of 12'2d. per pound, this price comparing very favourably with the average for the season.

The second matter of difficulty arose in connection with the sole leather for military boots. The boot experts and manufacturers in the trade concurred that the very best leather we could have put into our military boots was "butts of prime well-tanned sides." This leather is obtainable from ox-hides or hides of ox quality, usually weighing over 45 lb. each. At the beginning of this year it was apparent that the supplies of this class of hide in the Dominion were becoming low, owing principally to large exportations to Australia, and I conceived it my duty to devise some means of ensuring a sufficient supply being available in order that the military boots required by the Department for 1916 might be efficiently manufactured. The Australian Government had evidently experienced the same difficulty regarding the supply of suitable hides for the manufacture of heavy leather, for on the 31st December, 1915, they prohibited the export of hides weighing 45 lb. and over to all destinations except with Ministerial consent. Following on the action taken by the Commonwealth Government, on the 2nd February, 1916, the export of hides of the above-mentioned weights was prohibited also by the New Zealand Government except with the consent of the Minister of Customs. This embargo was kept on for about two months, at the end of which time the situation had considerably eased; and in view of this fact, as well as the strong representations which had been made by the Commonwealth Government also

requiring heavy hides for military purposes, an arrangement was made whereby the exportation of hides weighing 45 lb. and over was allowed, providing 10 per cent. of the hides for which permission to export was desired was retained for delivery at prices previously agreed upon at a conference of parties interested to tanners engaged in supplying manufacturers of military footwear. It was also arranged that the selection of the hides was to be made by a representative nominated by myself, so that the retention in the country of hides suitable for military purposes would be ensured. These arrangements have proved satisfactory by enabling tanners to continue to supply the manufacturers of military boots with leather at prices not exceeding those which were ruling prior to the embargo, and on which the manufacturers had based their tenders for the supply of the Government's requirements in military boots and shoes for the current year.

As evidence of the need to arrest the export of hides (especially those likely to produce leather suitable for military work) the following figures, taken from the *New Zealand Trade Review* for May last, are of interest:—

*Export of Hides, October to April.*

1915-16.	1914-15.	1913-14.
347,512	264,433	151,126

To illustrate the nature of the difficulties which present themselves in connection with the acquisition of military supplies in their present extensive quantities, I may mention that it was found early in this year that it was impossible to procure from stocks held sufficient spurs to equip all the mounted men that were to be despatched. Therefore expert advice was sought in regard to the possibility of arranging for their production locally. On looking into the matter experiments were made necessitating a supply of nickel. It was found most difficult to secure this metal in the state required for the experimental work, but eventually a small supply was purchased in the shape of spent rifle-bullets which had been collected from rifle ranges. On the experiments proving satisfactory instructions were immediately issued by the Commandant whereby sufficient nickel for 4,000 pairs of spurs was collected, and sold by the Department to the manufacturer under a satisfactory arrangement.

#### RIFLE PULL-THROUGHS.

About September last Mr. C. H. Hewlett, of Christchurch, generously offered to organize and train some two hundred men who would be prepared in their spare time to give their services in the interests of the country, and, provided the Government supplied the material, offered to make 30,000 rifle pull-throughs for the Defence Department, the cost working out at slightly over 2½d. each, as against the ordinary price of 5d. each. This patriotic offer was gratefully accepted, and the first batch of 2,250 pull-throughs came to hand about the middle of January last. These articles were reported on as being well made and of good material, and quite suitable to the requirements of the Defence Department. Since then batches of 2,500 have been coming forward at regular intervals, and Mr. Hewlett and his energetic band of patriotic workers are to be congratulated upon the success of their efforts in assisting the Government in the manner indicated.

#### CONCLUSION.

In conclusion, I have to state that I have endeavoured to provide in a businesslike manner and on strictly commercial lines for the large quantities of varied goods which are essential for the conduct of our military operations. In the discharge of this duty I have observed two primary principles, the first being to make certain of securing the full quantities of supplies needed, giving preference where possible to New-Zealand-produced articles, and the second being the buyers' function, to (consistent with quality) cheapen the market. In this connection the fact must be recognized that, while increased quantities are persistently required, depleted stocks only are available to meet the keen demand thereby occasioned. I have pleasure in stating that the stock-taking which was completed at my direction early this month reveals that ample stocks are held in store. In certain lines previously referred to as being in short supply in October last the position in these lines, as disclosed by the stock-taking, was approximately as follows: 38,000 blankets, 31,000 working-shirts, 15,500 jerseys, 53,000 pairs socks, 35,000 underpants, 30,000 undershirts, 36,000 cholera-belts. In other lines, too, the position is similarly sound.

This fact is of importance to the military authorities, who are now in a position to move troops without fear of hindrance from shortages of stores, and is also of significance to merchants and others, for the Department is therefore no longer impelled by necessity to treat for supplies, except on the most advantageous terms. Steps are being taken to ensure a proper record of all transactions affecting stock in store, and by the adoption of a card system the quantity of each article in stock can readily be ascertained. It should also be mentioned that all goods delivered are examined by a staff of expert examiners before payment is made.

#### SUPPLIES BOARD OF ADVICE.

I desire to acknowledge the generous and great assistance which has been afforded me by the members of the Supplies Board of Advice—namely, Messrs. A. H. Miles, Alexander Macintosh, and George Wilson—in regard to the many novel and oftentimes difficult situations which have arisen during the course of our pleasant association.

#### NEW ZEALAND MILITARY SUPPLIES PURCHASE OFFICE.

I further desire to express my appreciation of the work done by the Supplies Purchase Office (under the charge of Mr. A. M. Adams), and in connection with this office to gratefully acknowledge the generous and valuable help afforded me by gentlemen expert in the various branches of



our business, who have for patriotic reasons given their gratuitous assistance to their country by attaching themselves to the office which was created to control or conduct buying operations in respect of military requirements. Chief among these gentlemen are—

Mr. Sidney Kirkcaldie, of Kirkcaldie and Stains (Limited), Wellington;  
 Mr. J. L. Morrison, representative in New Zealand for Messrs. I. and R. Morley (England), Wellington;  
 Mr. G. R. Ritchie, Dunedin;  
 Mr. M. P. Cameron, Hardware Expert, Customs Department, Wellington;  
 Mr. A. W. Blair, of Messrs. Chapman, Skerrett, Tripp, and Blair, barristers and solicitors, Wellington;  
 Mr. F. W. Furkett, Inspecting Engineer, Public Works Department, Wellington; and  
 Professor F. P. Worley, University College, Auckland.

I also desire to express my thanks for the prompt and courteous attention given to my requests in regard to matters connected with supplies which have been dealt with by various Government Departments, particularly to the Labour Department and the Government Printing Office.

#### COST OF CONTROLLING BUYING OPERATIONS.

Owing to the gratuitous services of the gentlemen mentioned above and others who have similarly given their services to me, the Purchase Office under my control has been conducted at a strikingly low cost of 0·0005 per cent. of the value of business transacted since its inception in August last, which amounts in value to approximately two millions sterling, and, taking into account all lines required, represents, roughly, the handling of about 50,000,000 (fifty million) articles when the same will have been handed over to the officers under the control of my colleague the Hon. the Minister of Defence.

#### MUNITIONS.

In August last, when the portfolio of Minister in Charge of Munitions and Supplies was created, the supplies of munitions for our Armies were not on such a firm basis as they apparently are at present, and there was an earnest desire on the part of the Government and a large section of the public that the question of whether anything could be done by New Zealand to assist the Mother-country in this direction should be thoroughly investigated.

Prior to my taking office inquiries had been instituted by the Hon. Minister of Defence with the view of ascertaining whether the Imperial authorities could supply the New Zealand Government with machinery for the manufacture of munitions, or whether it was obtainable from other sources. The result of these inquiries showed that all the machinery of this nature was already in use and working at high pressure, and that it was hopeless to expect to be able to obtain any for the purpose of manufacturing munitions in New Zealand.

#### CONFERENCE OF ENGINEERS CONVENED.

The machinery not being available from outside the Dominion, it was clear that any attempt at manufacture would have to be made with the resources already available within the Dominion. With the idea, therefore, of gauging the capabilities of these, shortly after taking over office I convened a conference of some thirty-four of the leading engineers and others interested in the matter. This conference was held in Wellington on the 3rd September, 1915, when the following question was discussed: "Is it possible and practicable to manufacture in New Zealand the following articles for military purposes: (a) 18-pr. shells, complete or in part; (b) 4·5 in. shells, complete or in part; (c) Maxim guns; (d) rifle-parts; (e) bayonets and scabbards?"

The deliberations of the conference lasted throughout the whole day, and resulted in a committee consisting of the following gentlemen being set up to prepare a report on the subject: Professor R. J. Scott, Canterbury College, Christchurch (chairman); Mr. W. Price, of Messrs. A. and G. Price, Thames; Mr. H. H. Jackson, Chief Mechanical Engineer, New Zealand Railways (during Mr. Jackson's absence from the Dominion Mr. G. A. Pearson, who acted as Chief Mechanical Engineer, kindly consented to take his place on the committee); Mr. J. Stevenson, of the Stevenson and Cook Engineering Company, Port Chalmers; Mr. J. Keir, of Messrs. P. and D. Duncan, Christchurch; and Professor T. H. Easterfield, Victoria College, Wellington.

On the 6th September, three days after the holding of the conference, this committee furnished an interim report, the purport of which was that the bodies of 18-pr. and 4·5 in. shells could be manufactured in New Zealand, providing the steel could be procured. No suitable material was, however, available in the Dominion.

The committee were of the opinion that the manufacture of more than the bodies of shells should not be attempted, as it would not be possible to make cartridge-cases, nor feasible to provide the explosive.

The committee did not think it practicable to manufacture machine guns in any considerable number in the Dominion. This work, it was pointed out, was of an exceedingly difficult and complex character, and it would not be possible to ensure the high standard of accuracy required by the Imperial authorities for the necessary interchangeability of parts and reliability in the field without the establishing of a factory from which, under conditions then existing, no useful output could be obtained for a period of some two years.

The members of the committee recognized that, with the assistance of the best appliances in the Dominion, it would be possible, in time, to turn out, largely by expert hand work, a very limited number of guns. It might be here stated that the Railway Department were successful

in turning out a gun (with the exception of the barrel) at their Petone Workshops, but for various reasons Cabinet decided in February last not to proceed with the manufacture of these guns.

The above remarks relative to the manufacture of machine guns applied generally to the making of rifles, since, in order to manufacture rifles, hundreds of special machines were required.

The committee further considered that, if the material which was at that time in the Dominion was found on test to be suitable, the making of bayonets and scabbards could be proceeded with.

#### 18-PR. HIGH-EXPLOSIVE SHELLS.

Immediately on receipt of this report I instituted inquiries in Australia as to the possibility of securing steel made in accordance with Imperial specifications and suitable for the manufacture of 18-pr. high-explosive shells, as it was understood that this was the class of shell most required by the Home Government. An offer was received from the Broken Hill Proprietary Company (Limited), Melbourne, to supply suitable steel, and in order that an experiment might first be made as to the capabilities of the machinery available in the Dominion I placed an order for 5 tons of this material, sufficient for 250 shells. This duly came to hand in the shape of  $3\frac{1}{2}$  in. bars, which had been passed by the Commonwealth Government Inspector. It was similar steel to that with which the Australian workshops engaged in like manufacture have been supplied.

It might be as well to mention that the results of tests carried out by Professor Scott on this steel were not satisfactory, and these are confirmed by latest reports from Australia, which indicate that the steel showed defects which, although slight in themselves, disqualified the material for use for 18-pr. high-explosive shells.

For the purpose of carrying out the experiment the Railway Department kindly made available its Addington Workshops and the engineering staff employed therein, and both the General Manager, Mr. E. H. Hiley, and the Chief Mechanical Engineer, Mr. H. H. Jackson, rendered valuable assistance. Professor Scott, Chairman of the Munitions Committee, generously and patriotically offered his services in conducting and superintending generally the manufacture of the experimental batch of shell-bodies.

The preparatory work was at once entered upon. This involved the making of some seventy gauges and various jigs, the construction of a hydraulic banding-press, and the adaptation of several machines to the special character of the operations required. The manufacture of the gauges was a work of some magnitude, no master gauges being available. These had to be made at Addington from drawings supplied by the Federal Munitions Committee, Melbourne, the gauges being daily verified at the School of Engineering, Canterbury College, where the final adjustments were made, the limits of variation permitted being within one ten-thousandth part of an inch (0.0001). The construction of the master and working gauges and the preparatory work generally was practically completed at the time the 5 tons of steel arrived at the workshops in the early part of January last.

Besides the  $3\frac{1}{2}$  in. steel, base-plate steel was also required, and this it was possible to obtain in bars of  $2\frac{1}{2}$  in. by  $\frac{3}{4}$  in. from the same source as the  $3\frac{1}{2}$  in. round bar steel, 5 cwt. being necessary for the manufacture of the experimental batch of shells.

The obtaining of a supply of copper tubing suitable for driving-bands presented some difficulty at first, as no copper tubing of suitable size was to be obtained in the Dominion. A sufficient number of bands, however, was eventually procured from the Victorian State Munitions Committee, which had imported a quantity supplied to War Office specifications by the Broughton Copper Company, and was distributing them at landed cost to shell-contractors. It might be here mentioned that experiments had been carried out in the School of Engineering by Professor Scott, which finally resulted in an excellent quality of copper ring being produced by electro-deposition.

By the end of January a few 18-pr.-shell bodies had been completed, whilst others were in various stages of manufacture, and the Chairman of the Munitions Committee was in a position to submit a report on the practicability of proceeding in a more vigorous manner with the manufacture of this class of shell in New Zealand.

#### CABINET'S DECISION.

This report was placed before Cabinet for the purpose of enabling it to come to a decision on the question of the advisability of carrying on the manufacture of munitions in New Zealand. After full and careful consideration, Government decided to take no further action regarding shell-manufacture in the meanwhile, as they were of the opinion that under the circumstances New Zealand could be of greater service by directing all her energies towards the carrying-on of those important industries, such as freezing-works, dairying, &c., which are so essential for the maintenance of food-supplies to the troops, and to the carrying-on of which our Dominion is so well adapted. Besides, the output of shells, &c., from this Dominion would be infinitesimal as compared with the enormous quantities required, and would necessarily involve the setting-aside by the Railway Department of a large proportion of its important work of making carriages and locomotives, and maintaining the present rolling-stock; while if the work were undertaken by outside firms the assembling of their plant in central localities would have the effect of interfering to a large extent with the making of freezing-works machinery and dairying machinery which are so necessary for the proper carrying-on of the industries concerned.

#### CLOSE TOUCH KEPT WITH THE COMMONWEALTH AUTHORITIES.

Right from the time of my assuming office I was in constant and close communication with the Commonwealth authorities and the various State Munitions Committees on the steps which

were being taken in Australia in connection with the manufacture of the various kinds of munitions, such as shells, explosives, grenades, respirators, &c. Much valuable information and important plans and drawings were received from this source, including all the plans, specifications, circulars, &c., issued in connection with the manufacture of the 18-pr. shell in that country.

#### CENSUS OF MACHINERY AVAILABLE IN NEW ZEALAND.

During the time the preparatory work was being carried out at Addington Workshops endeavours were being made to obtain some idea of the machinery resources of the Dominion, and with this end in view a circular letter was despatched on the 9th September, 1915, to all firms throughout the country which it was thought would have in their workshops machinery suitable for the manufacture of munitions. This letter invited the addressees to fill in forms which were attached giving particulars of lathes and other machines in their possession, and also asked for an indication to what extent they would be willing to assist the Government by stating (1) the number of lathes and machines (if any) they would be prepared to allow it to have the use of in a central depot should such be established, and (2) the number of lathes and machines (if any) that they would be prepared to place at its disposal for use in their own workshops, and for how long daily.

Some eighty firms throughout New Zealand, as well as the various Harbour Boards, were approached, and they responded in a most generous and patriotic manner, many offering to place their whole plant and staff at the disposal of the Government. By this means a fairly complete census of the machines available for the manufacture throughout New Zealand was compiled for use in the event of the work being undertaken.

#### PROFFERED ASSISTANCE FROM UNIVERSITIES.

The Universities throughout New Zealand were also approached as to whether assistance could be expected from them in the way of special instruments and services of their staff, and in each case an earnest desire to assist in every possible manner was expressed.

#### BAYONETS.

In addition to shells, experiments were made in the manufacture of bayonets, and in this connection Professor Scott and Mr. J. Keir, a member of the Munitions Committee, very generously offered their services, with the result that a bayonet which passed all tests was produced. The practicability of manufacturing such weapons thus having been demonstrated, it was decided to invite tenders for the manufacture of 5,000 bayonets and scabbards, but a tender for scabbards only was received. In view of this, and various other reasons, it was then decided not to proceed with this manufacture.

#### RIFLES.

Some months ago an offer was received from a large manufacturing company in the United States for the supply and setting-up of a complete plant to manufacture 100 rifles per day. The delivery of this plant could not be completed for two years, and the output would therefore most likely not be helpful in the present war. In addition, the capital expenditure was exceedingly large, and Cabinet decided in this instance also that no action should be taken.

#### GRENADES.

Specimens of grenades manufactured by the Sabulite Company, of Waikunete, Auckland, were submitted to the Department, and these were tested at Wellington with good results. An offer to supply a certain number of these grenades was thereupon made to the Imperial Government, but a reply was received to the effect that they were not required, and it was consequently proposed to proceed no further with their manufacture in the Dominion.

#### EXPLOSIVES, RESPIRATORS, ETC.

Close touch has also been kept with all matters appertaining generally to the manufacture of different kinds of munitions—namely, explosives, respirators, &c.—but in each case on the circumstances disclosed it has not been thought advisable to take any action regarding manufacture in New Zealand. In connection with explosives, valuable assistance was rendered by both Professor T. H. Easterfield, of Victoria College, a member of the Munitions Committee, and Mr. E. Parry, Chief Electrical Engineer to the Public Works Department.

#### INVENTIONS RELATING TO ARMS AND MUNITIONS OF WAR, ETC.

Many communications have reached this office from people throughout the Dominion forwarding ideas and plans of inventions relating to arms and munitions of war. These communications have been sent on as received to the Defence authorities, with a view to their being considered by the military experts, or, if necessary, submitted to the Army Council.

#### MUNITION-WORKERS.

Numerous letters have been received from skilled mechanics and unskilled workers throughout the Dominion offering their services on munition-work either here or in England. These offers

have been recorded in the Department, so that should such services be required at any time no time would be lost in getting into touch with the willing helpers.

As regards those wishing to go to England: Some time previous to my taking office the Imperial Government was asked whether it would be prepared to accept the services of a certain number of mechanics who had had experience in the manufacture of munitions of war. The reply received, however, was that the matter had been carefully considered by the Munitions of War Committee, who appreciated highly the offer, but felt that questions of transport, distance, and testing workmen to be sent made it difficult to accept it.

#### CONCLUSION.

In a report of this nature it is only fitting that by way of conclusion I should take this opportunity of recording the appreciation and thanks of the Department for the willing and patriotic manner in which Professor Scott, Chairman of the Munitions Committee, the members thereof, and others mentioned in the report have given their services in providing expert knowledge on the various matters which have had to be dealt with.

ARTHUR M. MYERS,  
Minister in Charge of Munitions and Supplies.

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